(USPN 6,333,508) and any combinations of Saitou (USPN 5,311,026), Goodberlet et al., Collier (USPN 4,393,312), Sakamoto (USPN 5,051,556) and/or Aizaki (5,932,884) should be withdrawn. The Office Action relies on Katsap to show the mesh transparency and dithering. Katsap does not disclose, teach or claim the subject matter of the instant invention. The mesh transparency as taught in the instant invention is at least about 90% (page 12 lines 22 - 27) . Katsap does not disclose, teach or claim that percentage (although the Office Action does not give a cite in Katsap for this reference, the Applicant's found a cite for this subject matter at col. 4 lines 62 - 65). Further, the Office Action states that Katsap teaches dithering. It is unclear to the Applicant's that the "focused moving" referred to in the first full paragraph of page 3 of the Office Action is a repetitive, dithering like movement. If the cited paragraph from Katsap is read in its entirety, (starting at line 61 of col. 3) the Applicants do not believe that a dithering motion is implied or meant. Therefore, the Applicant's aver that Katsap does not disclose, teach or claim the subject matter of the instant invention. Assuming arguendo, that the view expressed in the Office Action does not change, the Applicant's will be filing a 37 CFR 1.131 declaration swearing behind the Katsap patent.

The rejection of any of claims 1 -29 over the combination of any of Saitou, Goodberlet, Collier, Sakamoto and/or Aizaki with Katsap does not cure the deficiencies of Katsap. Each of rejections in the Office Action relies on Katsap to show the transparency and dithering. The Applicant's believe that independent claims 1, 16 and 20 are allowable over the Katsap/Saitou and Katsap/Goodberlet and Katsap/Aizaki combination of references, respectively. Therefore the Applicant's believe that any of the dependent claims 2 - 15, and 17 - 19 (in addition to independent claims 1, 16 and 20) are allowable over any combination of Katsap and Saitou , Goodberlet et al., Collier, Sakamoto and/or Aizaki.

Reconsideration and allowance of claims 1 - 20 is respectfully requested.

Respectfully submitted,

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APPENDIX SHOWING THE SPEC AND CLAIMS IN MARKED UP FORM

Please replace the second full paragraph starting on page 3 line 19 with the following:

To overcome this limitation, shaped-beam- exposure tools have been developed which use two (or more) aligned, generally square, shaping apertures with a deflection arrangement there between. Thus a beam shaped by a first shaping aperture is caused to overlay (and be intercepted by) only a portion of the second shaping aperture in order to develop, for example, rectangular shapes of desired aspect ratios. Such a system, while avoiding mechanical movement of parts, presents problems of positioning since the shaped beam will be asymmetrically located with respect to the original beam and include stationary edges formed by the second shaping aperture and variable edges formed by the first aperture. Therefore, complementary deflection after shaping will result in the beam being off-axis.[,] To avoid undue complication in achieving a desired positioning the beam at the target, a corner of the shaped beam formed by the second shaping aperture is used as a reference point.

Please replace the first full paragraph starting on page 5 line 19 with the following:

Further, there is an additional class of lithographic exposures known as mask making (e.g. for making reticles for use in any optical, deep UV, extreme UV, electron-projection, ion-projection, and x-ray lithography tools), which does not allow for placement of registration

targets on the workpiece or otherwise in the target plane. For this class of exposures, the pattern placement accuracy depends on a process known as emulation whereby the patterned substrate is characterized by an external metrology tool and the positional error information is fed back to the tool for subsequent exposures. This mode of operation is known as blind writing and the time between external measurement and subsequent corrected exposure may be measured in days. This mode of operation only succeeds when the tool possesses extreme stability.

Please replace the first full paragraph starting on page 12, line 6 with the following:

It will be immediately apparent from a comparison of Figures 1 and 2 that the invention additionally includes a probe mesh 110 and a probe dither deflector 120. The probe mesh 110 is preferably a fine wire grid of metal or other material capable of absorbing or backscattering electrons emitted from electron source 10. (A contrast aperture 111 may be included to prevent scattered electrons from further interfering with the beam.) A lithographically produced pattern of, for example, gold on a thin silicon substrate is suitable for the practice of the invention, as are many other structures which will be apparent to those skilled in the art. While relatively fine features are preferred in the probe mesh, sufficient robustness to the incident electron current must be provided. Resolution of the system is maximized by the sensing of edges of features of the probe mesh. Hence, fine features are preferred to preserve beam current while providing a relatively greater length of feature edges. Transmissivity of the probe mesh 110 is preferably 90% or greater.

Please replace the second full paragraph on page 16 starting on line 26, with the following:

For mask making it is desirable that the step of pattering the fiducial grid on the mask be unintrusive as possible while providing maximum signal to noise ratio. A metal back scatter potentially interferes with the mask processing and the signal to noise ratio is dependent on the relative back scatter coefficients and percent coverage of fiducial grid. For the [scint6illator] <u>scintillator</u> approach in accordance with the invention, the signal to noise ratio is improved due to the absence of photon radiation off the fiducial grid. Such a material emits light when electrons are incident on it and the resultant light can be detected by a sensor such as a photo-diode or photomultiplier 180 (Figure 2) that may be placed at a location in the tool that does not interfere with operation of the tool or the lithographic exposure.

Please replace the first full paragraph on page 18 line 12, with the following:

While high transmissivity is preferred, these probe mesh dimensions are convenient since the shaping apertures are generally about 240 microns; yielding ten stripes in each coordinate direction. The number of stripes must be sufficient that at least one stripe remains in each coordinate direction after the beam is shaped by the shaping apertures. The stripe width must also not be so narrow that contrast in the shadow image 420 is significantly reduced by slight variations of electron trajectory in the beam. Perhaps more importantly, however, the range or displacement of the dither pattern must be only slightly less than the pitch of the probe

mesh features, referred to the target plane, so that the shadow features will substantially cover the area of the shaped spot and the dither pattern must be executed within a time that is shorter than the exposure time for a projected feature. The dithering of the shadow image of the probe grid over the target stripes results in a signal which depends, in part, on the response time of the scintillator material. This signal must be within the bandwidth of the detector, including the response time of the scintillating material. Further, if a raster dither pattern or the like is used the pitch of the raster lines must not exceed stripe width in order to assure reliable detection.

In the claims:

Please amend claim 3, as follows:

3. A method as recited in claim 1, including the further steps of

passing said charged particle beam through a first shaping aperture,

deflecting said charged particle beam, and

intercepting a portion of said charged particle beam with a second shaping aperture while shaping a remainder of said charged particle beam passed through said second [shapiong] <u>shaping</u> aperture.